

# NEW STRUCTURE PROBLEMS IN LIGHT EXOTIC NUCLEI

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We study the ground state and excited states of C isotopes using microscopic models. A deformed Hartree-Fock (HF) + BCS model with Skyrme interactions is performed to study the isotope dependence of deformation properties of C, N and Ne isotopes as a manifestation of Jahn-Teller effect. It is shown that shallow deformation minima appear in both the oblate and the prolate sides in  $^{16}\text{C}$ ,  $^{17}\text{C}$  and  $^{19}\text{C}$  having almost the same binding energies. We discuss also shell model calculations to study magnetic moments, electric dipole and quadrupole transitions of B, C and N isotopes. We show clear empirical evidence of the isospin dependence of the effective charges of quadrupole moments in B isotopes in both proton and neutron drip line nuclei. It is also pointed out that the isotope dependence of quadrupole moments and magnetic g-factors in the odd C isotopes will be useful to find out the deformation and unknown spin-parities of the ground states of these nuclei. The low-lying electric transitions of C and Ne isotopes are also discussed.

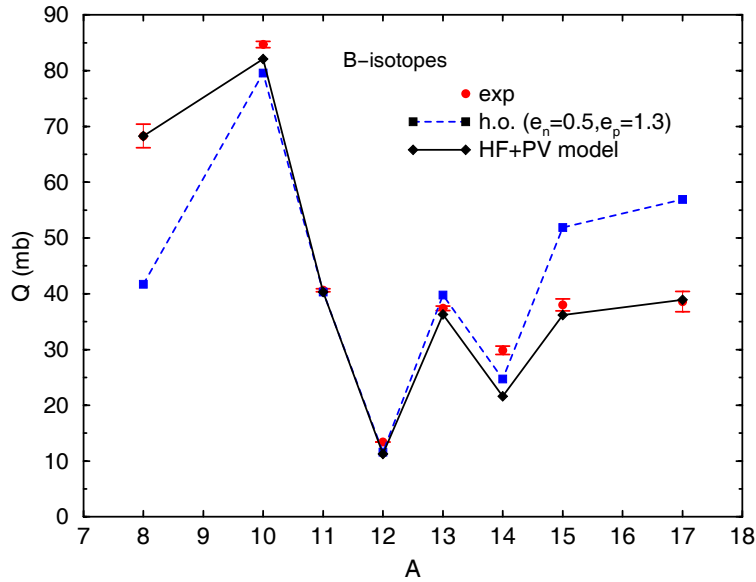


Figure 1: Q-moments of B isotopes. The solid line is obtained by using the core polarization charges of microscopic Hartree-Fock and particle-vibration coupling model, while the dashed line is the results of constant effective charges. The shell model wave functions are calculated with Warburton-Brown effective interaction. The references of experimental data can be found in ref. [1].

## References

- [1] H. Sagawa and K. Asahi, Phys. Rev. **C63**, 064310 (2001).  
H. Ogawa et al., Phys. Rev. **C67**, 064308 (2003).